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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,119	02/27/2004	Jae-Yoel Kim	678-1367	7609

66547 7590 08/22/2007
THE FARRELL LAW FIRM, P.C.
333 EARLE OVINGTON BOULEVARD
SUITE 701
UNIONDALE, NY 11553

EXAMINER

PORTIS, SHANTELL L

ART UNIT	PAPER NUMBER
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2617

MAIL DATE	DELIVERY MODE
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08/22/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.		Applicant(s)	
	10/789,119		KIM ET AL.	
	Examiner		Art Unit	
	Shantell Portis		2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,6,9,10,12,14,15 and 18 is/are rejected.
- 7) ☒ Claim(s) 2,4,7,8,11,13,16 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on May 24, 2007 have been fully considered but they are not persuasive.

Regarding Claims 6 and 15, the applicant argues that ***Mody does not teach “a first preamble for synchronization” and “a second preamble for channel estimation”***.

The examiner respectfully disagrees. Mody et al. discloses a communication system for estimating parameters of a channel across which a signal is transmitted. Circuitry is provided for calculating parameters indicative of the characteristics of the communication channel. Estimates of channel parameters may include channel estimates and noise variance estimates (Abstract). According to paragraphs [0007] and [0008], Mody et al. discloses in ***typical*** communication systems, training symbols or ***preamble*** at the beginning of data frames are usually added as a prefix to the data symbols. The training symbols in SISO systems are ***used*** to provide ***synchronization*** of the received signals with respect to the transmitted signals, as well as to provide ***channel parameter estimation***. The purpose of Mody et al.'s invention is to provide for a method and apparatus that is capable of providing time and frequency synchronization in MIMO systems and can further perform channel estimation. Mody et al. further discloses by utilizing the structure embedded in the training symbols, the MIMO system of the present invention is capable of providing the time and frequency synchronization as well as perform channel estimation [0009] and [0010]. Although

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Mody et al. does not specifically mention the difference between training symbols/preambles by "first" and "second", Mody et al. does disclose preambles (first and second) for synchronization and for channel estimation.

Regarding Claims 1, 3, 10 and 12, the applicant argues that ***Applicants could not find any reference in Mody to the recitation of a first preamble generator for generating a first preamble for synchronization using an aperiodic sequence with an aperiodic correlation property and a second preamble generator for generating a second preamble for channel estimation using the aperiodic sequence.***

The examiner respectfully disagrees for the same reasons as stated above regarding Claims 6 and 15. In addition, Mody et al. discloses a frame that is transmitted across the channel from the transmitting antennas to the receiving antennas. The frame consists of preamble and training symbols that help the receiver identify the arrival of the frame and perform time synchronization, frequency synchronization and channel parameter estimation [0051].

Mody et al. fails to disclose transmitting the multiplexed preambles as a preamble of the UWB communication system.

However, applicant's APA discloses transmitting the multiplexed preambles as a preamble of the UWB communication system (**Figures 1-3 refer to a UWB system that has two structures, a first frame structure (preamble 200) and a second frame structure (preamble 300)).**

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use preambles at the beginning of data frames in various types of well known communication systems.

The combination of Mody et al. and Applicant's Acknowledged Prior Art (APA) discloses all limitations as set forth in Claims 1, 3, 10 and 12.

Therefore, the examiner maintains the rejections as set forth below.

Allowable Subject Matter

2. Claims 2, 4, 7, 8, 11, 13, 16 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 6 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Mody et al. (Mody), U.S. Publication No. 2002/0181390.

Regarding Claims 6 and 15, Mody discloses an apparatus and method for

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receiving a preamble in a UWB communication which comprises: a demultiplexer for demultiplexing a received signal and outputting the demultiplexed signal as a first preamble for synchronization, a second preamble for channel estimation, and data; correlation detector for performing synchronization using the first preamble and outputting synchronization information based on performance results; a channel estimator for performing a channel estimation using the second preamble and outputting a channel estimate based on the performance results; and a data recoverer for recovering original data using the synchronization information and the channel estimate (Data frames consisting of preambles or training symbols are transmitted by a transmitter 8 across the wireless channel 9 and received by receiver 10. The encoder 14 separates the data onto multiple paths in the transmitter, once the demodulated signals are received; the signals are then combined to its original data and received by a device. The training symbols or preambles are at the beginning of data frames and are used to provide synchronization and channel parameter estimation; [0007], [0009]-[0011] and [0028]-[0030]).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 1, 3, 5, 9, 10, 12, 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mody et al. (Mody), U.S. Publication No. 2002/0181390 in view of Applicant's Acknowledged Prior Art (APA).

Regarding Claims 1, 3, 10 and 12, Mody discloses an apparatus and method for transmitting a preamble in a communication system, which comprises: a first preamble generator for generating a first preamble for synchronization using an aperiodic sequence with an aperiodic correlation property; a second preamble generator for generating a second preamble for channel estimation using the aperiodic sequence; and a transmitter for multiplexing the first and second preambles **(Training symbols or preambles are at the beginning of data frames and are used to provide synchronization and channel parameter estimation; [0007] and [0039])**.

Mody fails to disclose transmitting the multiplexed preambles as a preamble of the UWB communication system.

However, applicant's APA discloses transmitting the multiplexed preambles as a preamble of the UWB communication system **(Figures 1-3 refer to a UWB system that has two structures, a first frame structure (preamble 200) and a second frame structure (preamble 300))**.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use preambles at the beginning of data frames in various types of well known communication systems.

Regarding Claims 5, 9, 14 and 18, Mody discloses an apparatus and method as described above.

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Mody fails to disclose wherein said periodic sequence is a CAZAC (Constant Amplitude Zero Auto Correlation) sequence.

However, applicant's APA discloses wherein said periodic sequence is a CAZAC (Constant Amplitude Zero Auto Correlation) sequence **(A CAZAC sequence for generating preambles are suggested in UWB communication systems; [0063])**.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use CAZAC sequences to have a good correlation property for channel estimation; APA- [0029].

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shantell Portis whose telephone number is 571-272-0886. The examiner can normally be reached on Monday-Friday 7:00am-3:30pm EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on 571-272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


SLP


LESTER G. KINCAID
SUPERVISORY PRIMARY EXAMINER